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10/034,480	12/20/2001	Kazuo Hirose	WAKI-203	2161

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/034,480

Applicant(s)

HIROSE ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendments to the specification and abstract of the disclosure in Paper No. 6, dated 7/16/03, are acknowledged and accepted. The Examiner notes that a portion of the amendments to the specification was not entered since the marked-up copies did not include the entire paragraph for each of the amended sections. In particular, the following amendments were not entered:

Page 8, line 19; Page 21, line 4- changing 'deflexion' to 'deflection',  
Page 34, line 23- changing 'mm' to ' $\mu\text{m}$ ',  
Page 37, line 22- changing 'hold' to 'held'.

The Examiner notes that the marked-up copy requires the entire paragraph for which an amendment is required.

2. It is also noted that the amendments to Claims 1 and 11 in Paper No. 6, dated 7/16/03, are acknowledged and accepted. In view of these amendments, the claim objections in Section 5 of Paper No. 4, dated 3/18/03, are acknowledged and accepted.
3. Further, the addition of Claims 18-20 in Paper No. 6, dated 7/16/03, are acknowledged and accepted.

### ***Response to Arguments***

4. The Applicants argue that Ikegame et al. in view of Hayakawa et al. fails to teach or reasonably suggest an optical pick-up for use in an information recording/read apparatus in which the bearing surface has excellent roundness and parallelism of the lens receiving

Art Unit: 2872

surfaces being maintained with high accuracy, and further that the lens holder be produced using a disc gate. The Examiner disagrees, and notes that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

5. The Applicants argue that Hirose in view of either Tachikawa et al. or Makabe et al. fails to teach or reasonably suggest an optical pick-up comprising a supporting shaft, wherein the bearing part is a molded product of a liquid crystal resin composition having flexural elastic modulus of 10 GPa or more. The Examiner respectfully disagrees. The combined teachings of Hirose, Tachikawa et al., and Makabe et al. suggest the fabrication of the optical pick-up using a liquid crystal resin composition, and further that the liquid crystal resin composition includes the physical property of the flexural elastic modulus being 10 GPa or more. Further, the Applicants argue that the lens holder of the optical pick-up having a sufficient sliding property. The features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Claims 1-20 are rejected as follows.

### ***Claim Objections***

7. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to

Art Unit: 2872

cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 1 already recites the limitation that the gate is disposed parallel to an inside perimeter of the bearing part (See Claim 1, line 8).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-4, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. (U.S. Patent No. 6229778), of record, in view of Hayakawa et al. (JP 06027360A), of record.

Ikegame et al. discloses an optical pick-up (See Figures 2, 3, 9, 10) comprising a support shaft (See 12 in Figure 10), and an lens holder (See 6 in Figure 10) having a bearing part (See the bore of 6 which is engaged with shaft 12 in Figure 10) which fits on the supporting shaft rotatably, wherein the lens holder is a resin molding product (See col. 8, lines 7-17) comprising a lens supporting part (See 6a in Figure 10) having a lens receiving surface (See surface on which element 21 rests in Figure 10), and the bearing part having a bearing surface disposed vertically to the lens receiving surface (See surface on which element 21 rests and the bore of 6 which is engaged with shaft 12 in Figure 10). Additionally, Ikegame et al. discloses the optical pick-up having a plurality

of lens receiving surfaces disposed on it (see 4, 5, in Figures 2, 3) and the resin molded product being a liquid crystal resin composition (See col. 8, lines 7-17). Ikegame et al. lacks the resin molded product comprising a gate at an end of the bearing part disposed at an opposite side of the lens receiving surface and disposed parallel to an inside perimeter of the bearing part. However, Hayakawa et al. teaches a method of producing a lens holder for an optical pick-up using an injection molding technique (See Figures 1, 2, 4) wherein the resin is injected into a dye through a gate (See 10 in Figures 1, 2, 4; Abstract) such that the gate is disposed parallel to the inside perimeter of the bearing part (See 4 in Figures 1, 2, 4). Hayakawa et al. additionally teaches that the position of the gate may also be moved to the circumference of the lens holder, as shown in Figures 3, 6, and 7. One skilled in the art would realize that the gate may be positioned anywhere on the surface of the lens holder, such as at an end of the bearing part disposed at an opposite side of the lens receiving surface (See recess next to 3 in Figures 1, 2, 4) or i.e. the gates 10 are located on the opposite side of where they are located in Figures 1, 2, 4, so long as the molten resin is injected to fill the entire dye to form the lens holder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise a gate at an end of the bearing part disposed at an opposite side of the lens receiving surface and disposed parallel to an inside perimeter of the bearing part, as taught by Hayakawa et al., in the optical pick-up of Ikegame et al. for the purpose of improving dimensional accuracy of the bearing part as well as increasing the mechanical rigidity of the lens holder.

10. Claims 5-7, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. in view of Hayakawa et al. as applied to Claims 1 and 4 above, and further in view of either Tachikawa et al. (U.S. Patent No. 6375863), of record, or Makabe et al. (U.S. Patent No. 6153121), of record.

Ikegame et al. in view of Hayakawa et al. discloses the invention as set forth above in Claims 1 and 4 above, except for the resin molded product comprising at least one of a fibrous filler and a flake filler, and has flexural elastic modulus of 10 GPa or more. However, both Tachikawa et al. and Makabe et al. teach the use of resins, such as liquid crystal polymer resin, for producing precision moldings, such as of optical pick-ups. In particular, Tachikawa et al. teaches the use of liquid crystal polymer resins for molding optical pick-ups (See col. 20, line 23-col. 21, line 15) in which fillers and fibers have been incorporated to increase the mechanical strength and other characteristic properties. For example, fillers, such as mica, talc, glass fibers, or carbon fibers, are added to the liquid crystal polymer resin composition to increase the elastic modulus and shield electromagnetic waves (See col. 13, line 40-col. 18, line 25). Makabe et al. teaches the use of liquid crystal resins for molding optical pick-ups (See Claims 1, 17; col. 15, line 24-col. 16, line 6) in which fillers and fibers, such as mica, talc, glass fibers, and carbon fibers, have been incorporated to provide good mechanical properties (See col. 10, lines 14-26). Additionally, the amount of such fibrous and flake fillers into the liquid crystal polymer resin is adjusted to achieve a particular elastic modulus, such as 10 GPa or higher (See Claims 1, 20; col. 18, lines 13-20; Table 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have

the resin molded product comprise at least one of a fibrous filler and a flake filler, and have flexural elastic modulus of 10 GPa or more, as taught by either Tachikawa et al. or Makabe et al., in the optical pick-up of Ikegame et al. in view of Hayakawa et al., for the purpose of adjusting the various properties, such as mechanical and electrical properties, of the final lens holder product based on the intended requirements.

11. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegame et al. in view of Hayakawa et al. as applied to Claim 1 above, and further in view of Hirose et al. (U.S. Patent No. 6108143), of record.

Ikegame et al. in view of Hayakawa et al. discloses the invention as set forth above in Claim 1, except for the supporting shaft being formed of a zirconia-containing ceramic. However, Hirose et al. teaches an optical pick-up (See Figures 1, 2, 3) that is very similar to the claimed invention, wherein at least one of the supporting shaft (See 2 in Figures 1, 2, 3) and the bearing part (See 5, 10 in Figures 1, 2, 3) of the optical pick-up is formed of ceramics containing zirconia (See Abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the supporting shaft be formed of a zirconia-containing ceramic, as taught by Hirose et al., in the optical pick-up of Ikegame et al. in view of Hayakawa et al., for the purpose of increasing the dimension accuracy of the supporting shaft, thus allowing for higher accuracy positioning of the optical pick-up beam.

12. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. in view of either Tachikawa et al. or Makabe et al.



Hirose et al. discloses an optical pick-up (See Figures 1, 2, 3) comprising a support shaft (See 2 in Figures 1, 2, 3), and an lens holder (See 8, 9 in Figures 1, 2, 3) having a bearing part (See 5, 10 in Figures 1, 2, 3) which fits on the supporting shaft rotatably, wherein the supporting shaft is formed of ceramics containing zirconia (See Abstract), and wherein the bearing part is a resin molding product (See col. 6, lines 19-47). Hirose et al. lacks the bearing part being a molded product of a liquid crystal resin composition having a flexural elastic modulus of 10 GPa or more. However, both Tachikawa et al. and Makabe et al. teach the use of resins, such as liquid crystal polymer resin, for producing precision moldings, such as of optical pick-ups. In particular, Tachikawa et al. teaches the use of liquid crystal polymer resins for molding optical pick-ups (See col. 20, line 23-col. 21, line 15) in which fillers and fibers have been incorporated to increase the mechanical strength and other characteristic properties. For example, fillers, such as mica, talc, glass fibers, or carbon fibers, are added to the liquid crystal polymer resin composition to increase the elastic modulus and shield electromagnetic waves (See col. 13, line 40-col. 18, line 25). Makabe et al. teaches the use of liquid crystal resins for molding optical pick-ups (See Claims 1, 17; col. 15, line 24-col. 16, line 6) in which fillers and fibers, such as mica, talc, glass fibers, and carbon fibers, have been incorporated from 1 to 80 parts by weight (See Abstract for the inclusion of aluminum borate whiskers) to provide good mechanical properties (See col. 10, lines 14-26). Additionally, the amount of such fibrous and flake fillers into the liquid crystal polymer resin is adjusted to achieve a particular elastic modulus, such as 10 GPa or higher (See Claims 1, 20; col. 18, lines 13-20; Table 1). Therefore, it would have been obvious to

Art Unit: 2872

one having ordinary skill in the art at the time the invention was made to have the resin molded product comprise at least one of a fibrous filler and a flake filler, and have flexural elastic modulus of 10 GPa or more, as taught by either Tachikawa et al. or Makabe et al., in the optical pick-up of Hirose et al., for the purpose of adjusting the various properties, such as mechanical and electrical properties, of the final lens holder product based on the intended requirements.

13. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. in view of either Tachikawa et al. or Makabe et al. as applied to Claim 11 above, and further in view of Ikegame et al.

Hirose et al. in view of either Tachikawa et al. or Makabe et al. discloses the invention as set forth above in Claim 11, except for the lens holder including a plurality of object lens holes. However, Ikegame et al. teaches an optical pick-up device (See Figures 2, 3, 9, 10) that includes multiple object lens holes (See 4, 5, in Figure 2) in the lens holder (See 6 in Figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the lens holder include a plurality of object lens holes, as taught by Ikegame et al., in the optical pick-up of Hirose et al. in view of either Tachikawa et al. or Makabe et al., for the purpose of providing enhanced read/write capabilities, particularly where multiple optical recording media, each with different optical characteristics, must read from/written to.

14. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. in view of either Tachikawa et al. or Makabe et al. as applied to Claim 11 above, and further in view of Umetsu et al. (U.S. Patent No. 6075114).

Hirose et al. in view of either Tachikawa et al. or Makabe et al. discloses the invention as set forth above in Claim 11, except for the resin composition comprising the liquid crystal resin mixed with 20-85% by weight of a whisker, such as titanium oxide whiskers, based on the total weight of the resin composition. However, Umetsu et al. teaches the use of liquid crystal resin having 20-85% by weight of a whisker, such as titanium oxide whisker, based on the total weight of the resin composition for fabricating optical pick-ups (See col. 11, lines 7-49; col. 13, lines 1-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the resin composition of Hirose et al. in view of either Tachikawa et al. or Makabe et al. comprise the liquid crystal resin mixed with 20-85% by weight of a whisker, such as titanium oxide whiskers, based on the total weight of the resin composition, as taught by Umetsu et al., for the purpose of providing improved strength, stiffness, and heat resistance, while preventing shrinkage during the molding process.

Further, Hirose et al. in view of either Tachikawa et al. or Makabe et al. discloses the invention as set forth above in Claim 11, except for the resin composition comprising fluororesins. However, Umetsu et al. teaches the use of liquid crystal resin having fluororesins for fabricating optical pick-ups (See col. 10, lines 37-60; col. 13, lines 1-56). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the resin composition of Hirose et al. in view of either Tachikawa et al. or Makabe et al. fluororesins, as taught by Umetsu et al., for the purpose of providing improved flame retardancy.

*Conclusion*

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

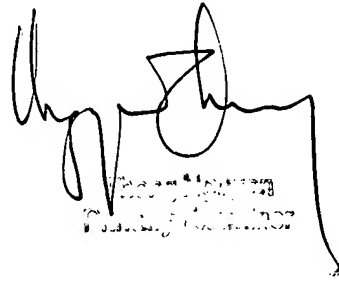
Art Unit: 2872

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-

1782.



Arnel C. Lavarias  
9/8/03



Arnel C. Lavarias  
9/8/03